

THE TAXONOMIC STATUS OF *PINUS CHIAPENSIS*^{1/}

by

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Since the original description of *Pinus strobus* var. *chiapensis* Martínez (1940), this taxon has been the subject of great phytogeographic and taxonomic interest. Its assumed near-relationship with the eastern North American *Pinus strobus* L. has been used by some biogeographers (Braun 1950; Dressler 1954) as evidence of relatively recent widespread distribution of the latter taxon in North America. Sharp (1946) regarded *P. strobus* var. *chiapensis* as a weakly differentiated geographic form of *P. strobus* devoid of significant morphological or physiological differences. Others (Gausсен, 1960; Loock, 1950; Soto, Barrett, and Little, 1962; Standley and Steyermark, 1958) have suggested that the variety was not conspecific with *P. strobus*.

In concert with taxonomic studies in the Haploxylon pines, I have had the opportunity to examine the Mexican population in detail. A large body of biosystematical evidence assembled from progeny studies, anatomical and morphological data, and field observations of this taxon, *P. monticola*, and *P. strobus* strongly suggests that *P. strobus* var. *chiapensis* should be elevated to the rank of species. The biometric study will be published separately.

TAXONOMY

PINUS CHIAPENSIS (Martínez) Andresen comb. et stat. nov.
Pinus strobus var. *chiapensis* Martínez, An. Inst. Biol. Mex.
11:81. 1940.

Lectotype: MEXICO, Chiapas, Ocotepec, Junio 1939,
Martínez s. n. (MEXU: photo MSC!).

Pinus chiapensis (Martínez) Gausсен, Trav. Lab. Forestier
Toulouse, tome II, sect. 1, vol. 1, part. 2, cpt 11:
91, 198, 1960. *nomen nudum*.

Excurrent tree 25-30 m tall, 1-1.5 m dbh; bark dark brown, broken into irregular rectangles; forest-grown individuals free of branches up to 10-20 m, those open-grown with live branches to ground; young twigs puberulent but soon becoming smooth. Leaves quinquifasciculate, persistent for 2-3 years, yellow green with 2-6 conspicuous bands of ventral stomata, dorsal surface

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devoid of stomata but marked by two longitudinal grooves; 8-12 cm long (mean 10.17), 0.67-0.99 mm wide (mean 0.75), margins finely serrulate with 10-20 serrations per 5 mm at leaf center, apices strongly spiculate; fibrovascular bundle solitary, surrounded by succulent mesophyll with numerous intercellular spaces, resin canals 2-3 (varying within a fascicle), external and at times contiguous with cuticle; fascicular sheaths light brown, 13-15 mm long and soon deciduous; cotyledons 6-10, 20-40 mm long, hypocotyl 20-70 mm long. Conelets upright, 2-3 per cluster with 10 mm peduncle, brownish gray, increments of female and male strobili several per year. Cones cylindrical when open, ovuliferous scales 60-80 (mean 77), total length 15-20 cm excluding peduncle of 17-20 mm; basal scales adnate with little or no reflexing, scales of central region 2 cm long, apophysis light brown, 10-15 mm wide, 8-10 mm long, tip of resinous umbo usually incurved, scale margins thin and undulating; seeds shed from mature cones from July to November in south Mexico and northern Guatemala; seed black to mottled brown, 5-6 mm long, 4 mm wide, 61,000 per kg (range 45,000-100,000), adnate wing yellow brown with dark brown longitudinal stripes, 25 mm long, 5 mm wide.

Distribution: Warm-temperate mountain slopes and ridges with frequent fogs and precipitation from 1500 to 5700 mm, between 800-2000 m elev., in States of Chiapas, Guerrero, Oaxaca, Puebla, and Veracruz, Mexico, and the Departments of El Quiché and Huehuetenango, Guatemala.

Specimens examined:

GUATEMALA: EL QUICHE: below cataracts along Rio Suchun below Nebaj, 4300-5000 ft. alt., 8 Feb. 1946, Sharp 4694 (F). HUEHUETENANGO: trailside slope about 5 miles from Barillas toward Rio Ibal, 5000 ft. alt. 1 Jan. 1946, Sharp 461 (F); pine woods of Cerro Jolommarac, above Finca San Rafael, Sierra de los Cuchumatanes, 900-1000 m alt., 24 Jul. 1942. Steyermark 49489 (F); Cerro Victoria, across river from Finca San Rafael, Sierra de los Cuchumatanes, near Barillas, 1800-2000 m alt., Steyermark 49729 (F).

MEXICO: CHIAPAS: Cintalapa (Copainala), Jun. 1939. Martínez 803 (A, 3 sheets, F, MEXU, with cone of *P. strobilus*, US); Paraña El Pinal, Colonia Francisco I. Madero, Cintalapa, 1080 m alt., 3 Oct. 1960, Sánchez 654 (Inst. Nac. Invest. Forest. Mex.); Copainala, May 1939, Martínez s. n. (US); Puebla Nuevo Solistahuacan, 1780 m alt., Sánchez 655 (Inst. Nac. Invest. Forest. Mex.); OAXACA:

between San Juan Jautla and San Juan Tentila, Cuicatlan, 17° 58' N. Lat., 96° 38' W. Long., 850 m alt., Schultes 765 (A); Chiquihuitlan Dist., 17° 59' N. Lat., 96° 28' W. Long., 850-1050 m alt., 17 Sep. 1962, Hallberg Chiq-I (MSC); Yotao, Dist. Ixtlan, 17° 23' N. Lat., 96° 19' W. Long., 1400 m alt., 18 Sep. 1962, Hallberg Yot-I (MSC); Cerro Yahuitze, Lachirioag, Dist. Villa Alta, 17° 21' N. Lat., 96° 09' W. Long., 1200-1820 m alt., Hallberg Yah-I (MSC); Mexican Route 131, km 185 south of Sola de Vega, 16° 11' N. Lat., 97° 02' W. Long., 1720 m alt., 22 Dec. 1962, Andresen & Steinhoff 2014 (MSC); west slope Cerro Yahuitze, Lachirioag, Dist. Villa Alta, 17° 21' N. Lat., 96° 09' W. Long., 1400 m alt., 26 Dec. 1962, Andresen & Steinhoff 2023 (MSC); PUEBLA: Apulco, cerca de Zacapoaxtla, 1260 m alt., 27 Apr. 1960, Sanchez 653 (Inst. Nac. Invest. Forest. Mex.); Apulco, Mun. de Zacapoaxtla, 1314 m alt., 21 May 1960, Madrigal & Vela s. n. (MEXU).

In the original description of *Pinus strobus* var. *chiapensis*, Martínez (1940) did not designate a type specimen. He did, however, illustrate the paper with four figures: (1) a photographic reproduction of immature cones and mature foliage from Ocotepec, Copamala, Chiapas; (2) a photograph of an open and closed cone pair from Cintalapa; (3) a line drawing of details of the cone and foliage which is based on a composite or mixed gathering of materials collected in Chiapas (probably at Cintalapa); and (4) a line drawing of the transverse leaf anatomy of two leaves collected near Coapilla, Chiapas. He also cited specimens or reports of *P. strobus* var. *chiapensis* from Tapalapa and Santa Maria, Chiapas. No depositories of specimens nor collectors' names are contained in the protologue.

As a check on the materials discussed in Prof. Martínez (1940) paper, Biol. Xavier Madrigal Sánchez, Botanist of the Instituto Nacional de Investigaciones Forestales de México searched the Herbario Nacional del Instituto de Biología (MEXU) and questioned Prof. Martínez about the existence of type material of *Pinus strobus* var. *chiapensis* and the status of the two specimens illustrated by him (1940). Professor Martínez indicated that the original diagnosis of the variety was based upon a composite sample of several specimens collected from various locations (personal correspondence with Biol. Madrigal Sánchez).

Since the date of Martínez' Ocotepec collection (described below) predates the publication of variety, and since it was obviously available to him when he described the taxon, it is here designated as the lectotype of *Pinus chiapensis* (Martínez) Andresen.

The lectotype specimen now housed in the Herbario del Instituto de Biología, Universidad Nacional de México (MEXU num. 97, photo MSC!) bears a glued label reading "Pinus strobus chiapensis, Martínez

(Var. Nov.) Ocotepec y Coapilla [,] Determinó. M. Martínez Dic. 1939." In a different script the word "tipo" has been added. Two branches, each bearing leaves, and two mature, open cones are affixed to the herbarium sheet. The larger branch has a small label attached by string which reads (unquestionably in Martínez script), "*Pinus strobus chiapensis* Var. Nov. Ocotepec, Chis Junio 1939. Martínez." Except for this tagged branch it is not certain which portions of the remaining material were obtained from Ocotepec and which from Coapilla. These two villages are about 10 km apart.

In the United States National Herbarium (US) there is a specimen labeled "*Pinus strobus chiapensis* Martínez Sta Maria, 20 km. de Cintalapa, Chis Jul. 1939 M. Martínez Isotipo 34.19." Because the specimen from Ocotepec is the lectotype, however, the latter (Martínez 39.14) cannot be an isotype.

Two other specimens labeled "*Pinus strobus* var. *chiapensis* Martínez" in MEXU warrant comment. The label of one sheet, num. 803, printed with Prof. Martínez' name gives the locality "Copainala, Chis" and is dated "Junio 1939." The twig and foliage specimen on this sheet and *P. chiapensis* but the single cone on the sheet unquestionably is *P. strobus*. The other (recently mounted) specimen also with Prof. Martínez' name printed on the label, bears the note "Canje: Stockwell 2008," but similarly consists of two foliated branchlets of *P. chiapensis* and one cone of *P. strobus*.

Pinus chiapensis (Martínez) Gaussen (1960) was not validly published because the basionym *Pinus strobus* var. *chiapensis* Martínez was not clearly indicated (it was not included at all) and no direct reference is given to the original publication, nor are any pages, plates, dates, or literature sources mentioned (cf. Lanjouw *et al.*, 1961: Art. 33).

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